

## REMARKS

In the Official Action dated April 4, 2005, the Examiner rejected Claims 1-3 under 35 U.S.C. § 103(a) as allegedly being not patentable over U.S. Patent No. 6,103,392.

This response addresses the Examiner's rejection. Accordingly, the present application is in condition for allowance. Favorable consideration of all pending claims is therefore respectfully requested.

Claims 1-3 have been amended, and new Claims 4-6 has been added. Claims 1 and 2 have been amended to correct an obvious typographical error. More specifically, the ~ has been corrected to a - . In addition, Claims 1-3 have been amended by deleting and adding terms thereto. These amendments to Claims 1-3 is supported by the underlying specification. New Claim 4 has support in original Claim 3, and on page 7 of the specification. New Claims 5-6 have support in original Claims 5-6, and on page 8 of the specification. No narrowing amendments have been made, and no amendments have been made in view of prior art. Entry of this amendment is respectfully requested.

In the Official Action dated April 4, 2005, the Examiner rejected Claims 1-3 under 35 U.S.C. § 103(a) as allegedly being not patentable over U.S. Patent No. 6,103,392 (Dorfman et al.). The Applicants respectfully traverse.

Claim 1 relates to a sintering method for a W-Cu composite material without exuding of Cu comprising the steps of:

holding the W-Cu composite material for 0.5-10 hours at 800-1083°C under a reduction temperature atmosphere; and

sintering the W-Cu composite material by increasing temperature to 1200-1400°C without a holding time.

Dorfman et al. do not suggest or disclose the two step process of the present invention. Specifically, Dorfman et al. do not disclose a sintering method for a W-Cu wherein a first step involves a sintering that is 0.5-10 hours in duration. Instead, Dorfman et al. discloses in column 13, lines 26-30, a temperature increase rate of 10°C/minute between 120 minute isothermal holds at 850, 950, 1050, 1100, 1150, 1200, and 1250°C.

Furthermore, Dorfman et al. do not motivate one skilled in the art to make the necessary modification in order to arrive at a sintering method for a W-Cu wherein a first step involves a sintering that is 0.5-10 hours in duration. The instant specification discloses that when sintering time is below 0.5 hours, a solid phase sintering and a liquid phase sintering are not sufficiently performed and a densification is not performed. No such motivation such as this is disclosed in Dorfman et al.

In addition, Dorfman et al. do not suggest or disclose a second step of increasing the temperature to 1200-1400°C and thereby cooling without an isothermal hold (i.e., no holding time). Instead, Dorfman et al. disclose a temperature increase rate of 10°C/minute between 120 minute isothermal holds at 850, 950, 1050, 1100, 1150, 1200, and 1250°C. In this respect, Dorfman et al. teach away from the present invention by requiring isothermal holds at 1200, and 1250°C.

Also, to the extent Dorfman et al. require holding times at 1200, and 1250°C, Dorfman et al. teach away from the claimed invention.

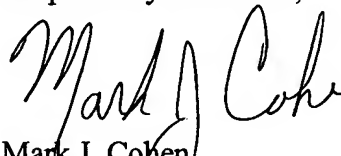
Furthermore, Claim 3 is further distinguishable from Dorfman et al. in that Dorfman et al. do not disclose or suggest the starting materials  $WO_3/WO_{2.9}$  and  $CuO/Cu_2O$  for W-

Cu. The  $\text{WO}_3/\text{WO}_{2.9}$  and  $\text{CuO}/\text{Cu}_2\text{O}$  starting materials in Claim 3 result in a different type of copper bleed-out in the W-Cu composite system, which is caused by W grain growth during particle rearrangement in a liquid state sintering stage. See page 2, lines 4-18 of the specification. In contrast, Dorfman et al. disclose that copper bleed-out is caused by local densification during solid-state sintering.

Since Dorfman et al. do not suggest or disclose all the elements of the claimed invention, and since Dorfman et al. do not motivate one skilled in the art to make the necessary modifications in order to arrive at the claimed invention, the Examiner has failed to put forward a *prima facie* case of obviousness under 35 U.S.C. § 103. Withdrawal of the rejection of the claims on this ground is respectfully requested.

Thus, in view of the foregoing amendments and remarks, the application is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,

  
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